Encoding your movie with UMD Stream Composer.

This chapter will describe how to encode your movie with Sony's **UMD Stream Composer**. Before you even consider doing this make sure you first read the chapters on preparing the video, audio, and subtitles for the encoding process. Without having gone through those essential steps the process described below will not work. The only tool needed for encoding your movie is a set of tools that are known as **UMD Tools**. This toolset includes **UMD Stream Composer** which is the main tool that we will be using in this part of the guide.

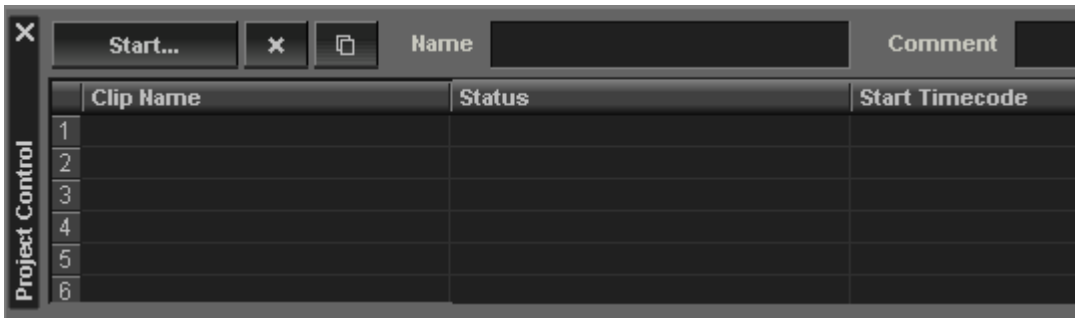
So let's start UMD Stream Composer and have a look what it looks like. As there's a lot of information, below you see only part of the screen, however it shows everything we need.

When you start your copy of UMD Stream composer it might look slightly different but all will have the same sections. If there are any those you are missing then select them in the **View** menu.

First there is the **Main Toolbar** where you can start a new project or open or save an existing one

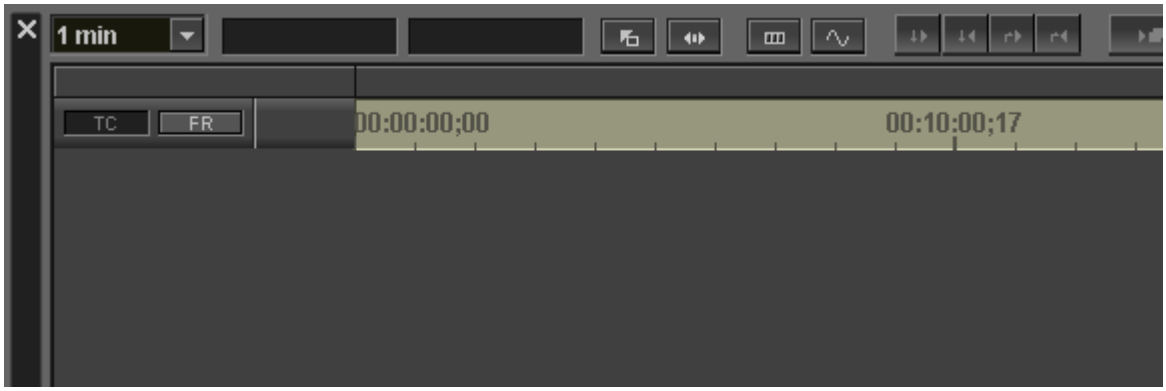
Next to this is the **Settings Toolbar** where you can change your source settings.

Then we have the **Project Control** section where you will find information on your current project and where we can start/stop the encoding process.

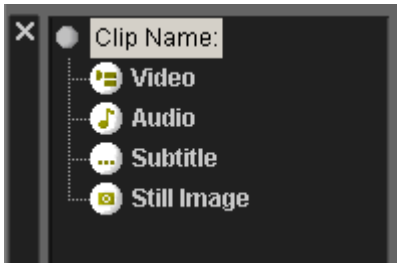


We also have the **Log Window** where messages will appear during the encoding process.

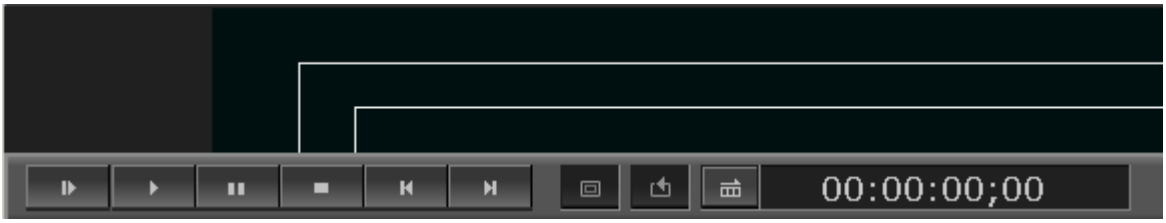
The **Timeline Viewer** section is where we get a visual overview of the streams we are using.



The **Clip Setting** section gives us a detailed overview of the streams we are using.

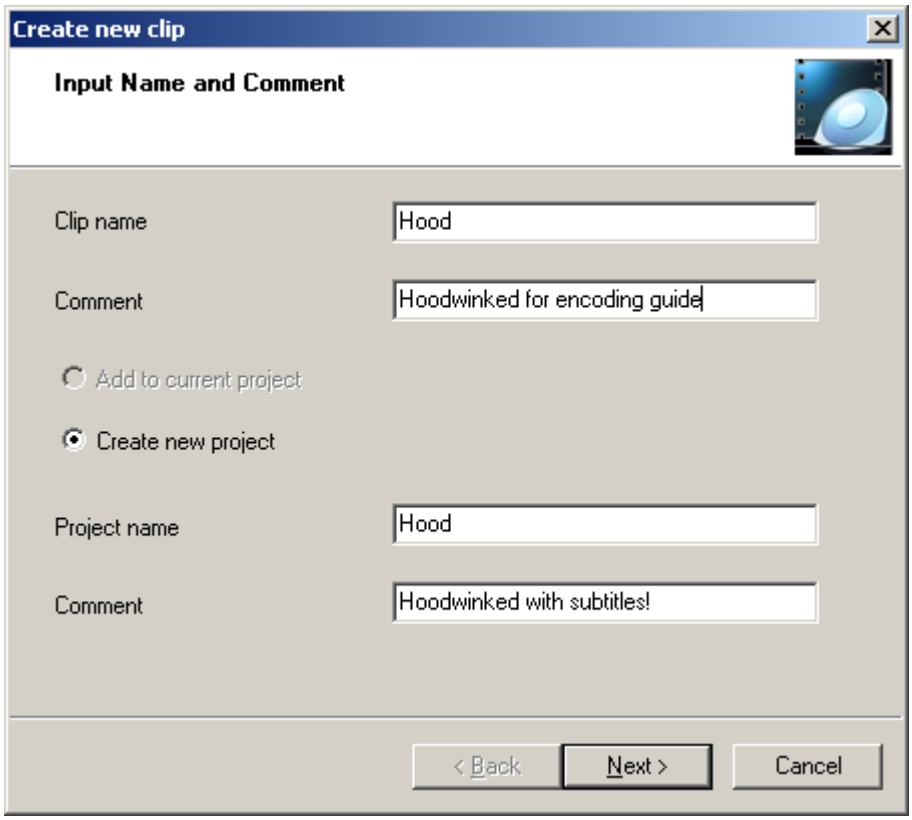


Finally we have the **Preview** section.



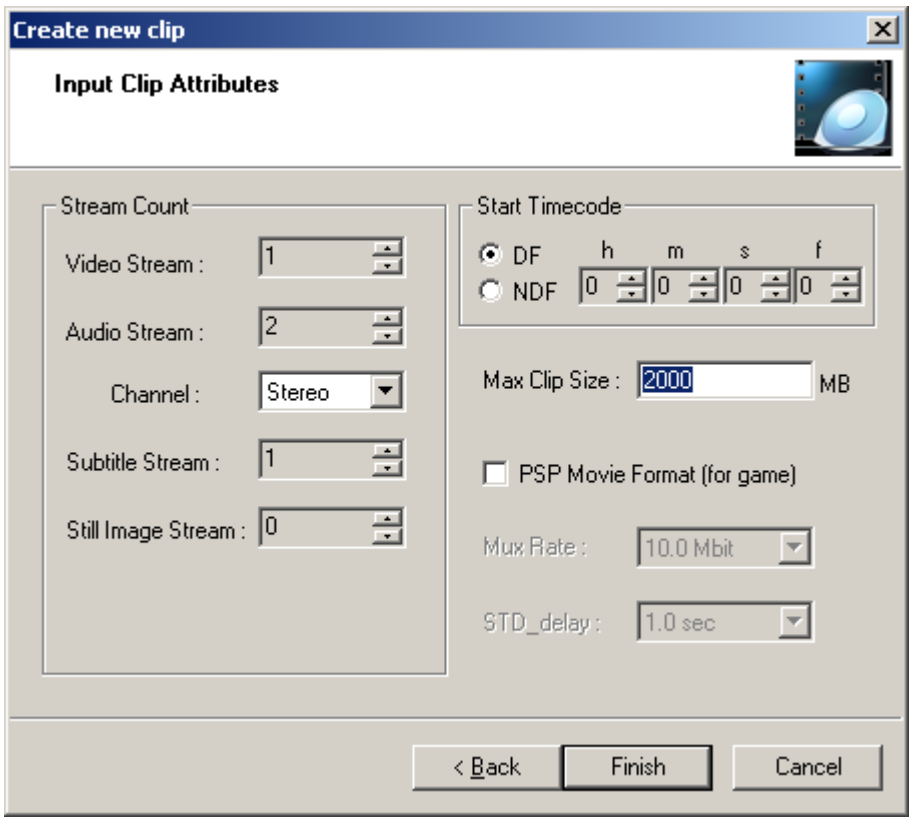
Though all of these sections have a function I will not discuss them all. For encoding a movie we only need a few of these. Most focus will be on the **Main** and **Settings Toolbars** and on the **Timeline Viewer**. There is a separate chapter describing some of the error messages that might appear in the **Log Window**. Any other messages are not really interesting.

Ok, let's get started by clicking **New** on the **Main Toolbar**. The following window opens:



Here we can enter a clip name, a project name and some descriptive information. For this guide I will do a re-encode of the first movie I ever released, Hoodwinked, however this time I will include the subtitles as when I did it originally nobody had figured out yet how to actually add the subtitles in Composer. Once you have entered your own project and clip information click **Next>**.

A new window opens, and this is where we initially set the number of streams (video, audio, subtitles) that we are going to use. Enter the correct values here.

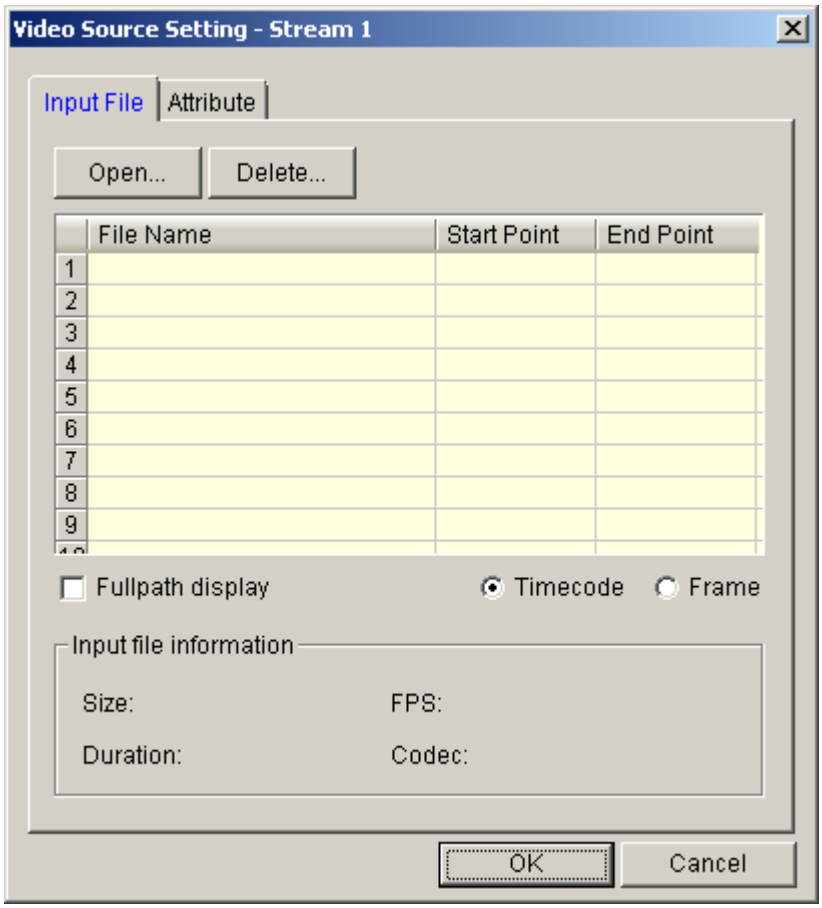


Hoodwinked has 1 video stream (as most movies will have), 2 audio streams (main movie soundtrack and I will also add Director's Commentary) and 1 subtitle stream (for the main movie).

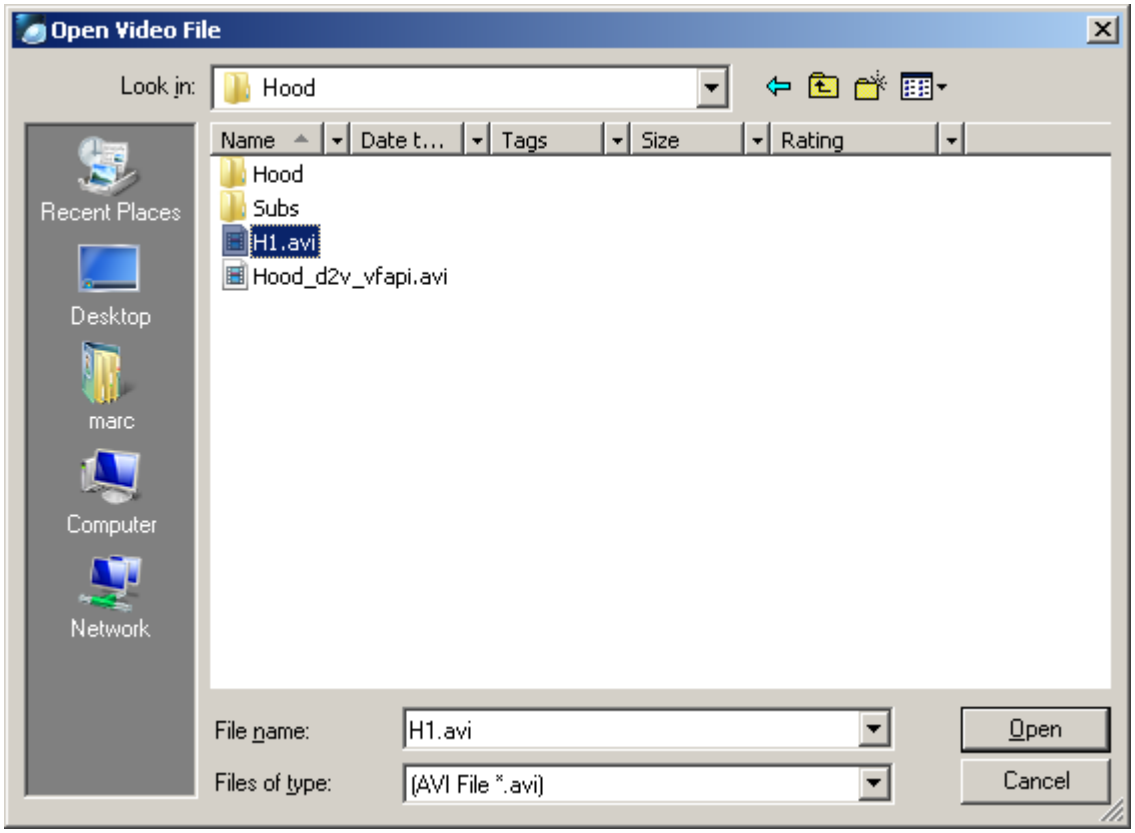
The one other important setting to change here is the **Max Clip Size**. Default value is 4000 MB. Change this to **2000** Mb. This will make sure you get a warning if your movie will get larger than roughly 2 GB. Most UMD's have a maximum size of about 1.7 GB. The PSP won't play any ISOs that are bigger than 2 GB. No other settings need to be changed here.

Once you did this click **Finish**. You will get back to the main UMD Stream Composer Window and will see that several sections have updated. The **Project Control** window and the **Clip Setting** section have filled with all kinds of information. And the streams you selected before have been added to the **Timeline Viewer**. Also the **Settings toolbar** has been activated. It is here that we will start loading the source files that we prepared in the other chapters.

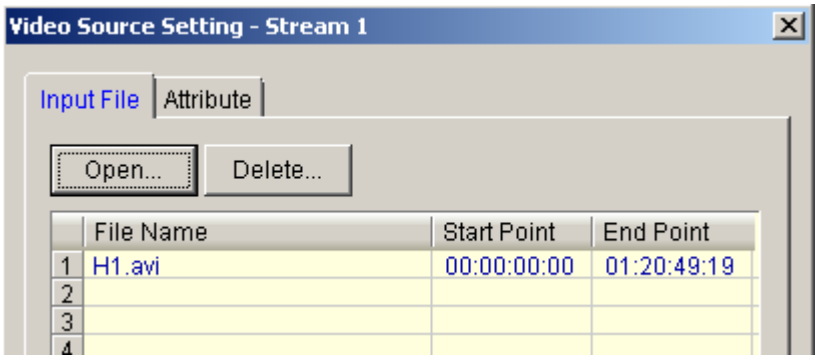
We start with loading the video. Click the **Video Source** button on the **Settings Toolbar**. The following window opens.



Click **Open…** and find and select the source file that you created with VirtualDub, then click **Open**.



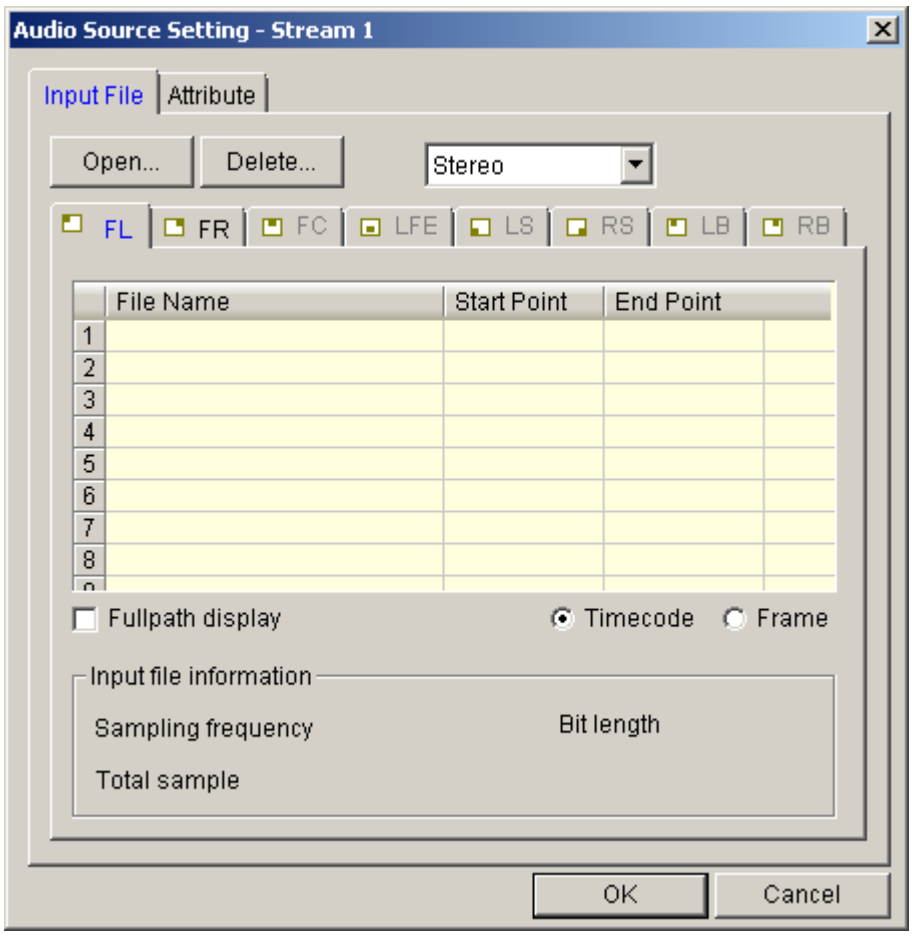
You will see the **Video Source Setting** window again and the file you selected will be listed.



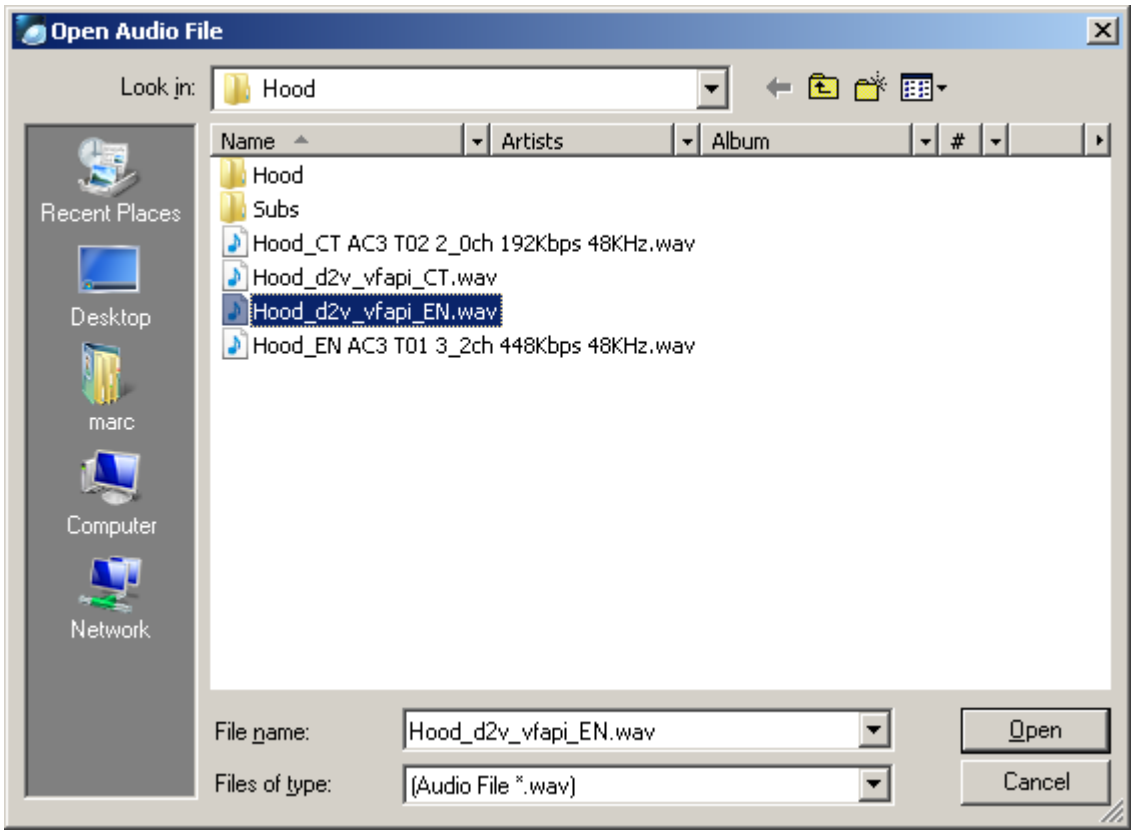
You can see here the movie playing time is 1 hour 20 minutes and 49 seconds. No other settings need to be changed. Click **OK**.

The stream appears in the **Timeline Viewer**.

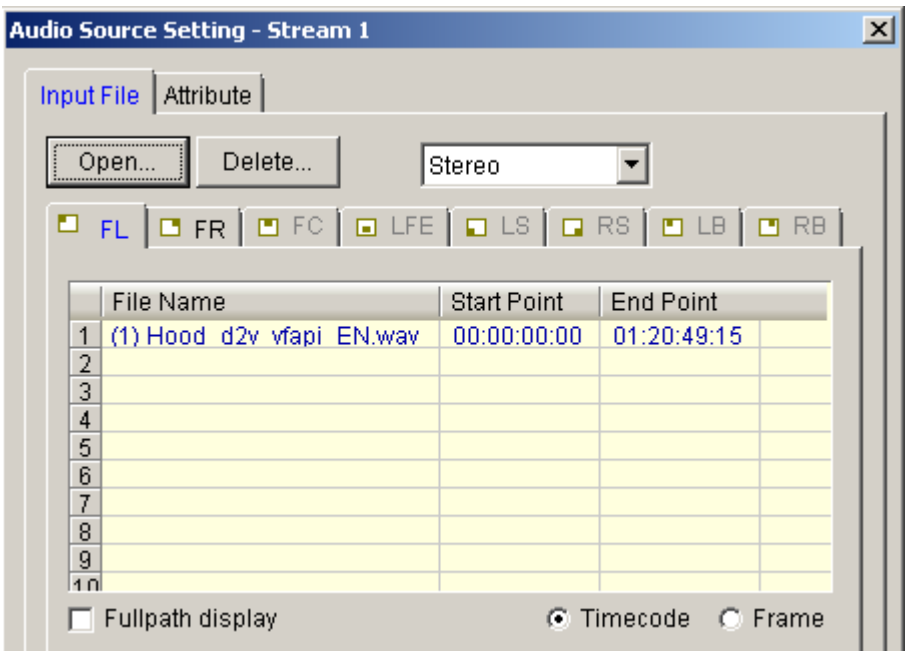
Next click the **Audio Source** button on the **Settings Toolbar**. The following window opens.



It's a similar window to the one we saw before where we loaded the video. It works the same, click open to load the audio stream. Find a select the source **WAV** file that you prepared.



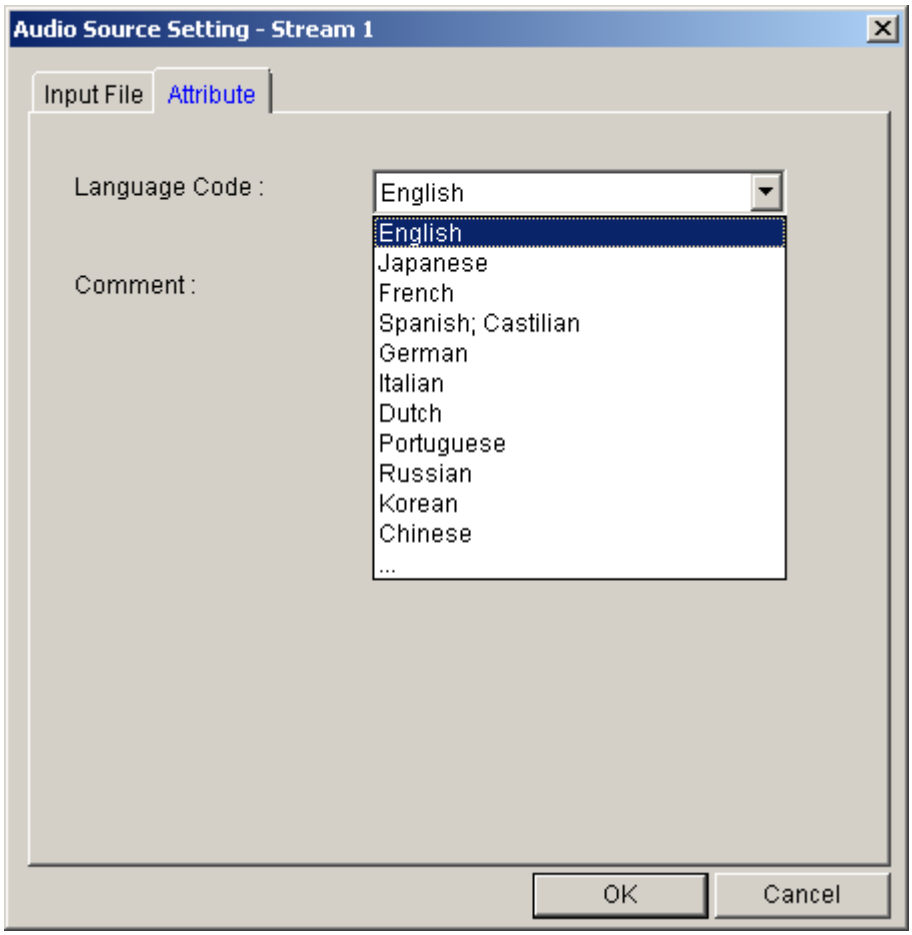
Click **Open**.



You can see here the audio stream has nearly the same **End Point** as the video stream, however it is not identical. Do not worry about this, they nearly never are. Sometimes there might be a difference of nearly a minute. That's ok.

Before clicking OK first select the **Attribute** tab.

Here you can set the language that will be displayed in the XMB menu on the PSP while playing the movie. Select the correct language from the list. I will choose English here as the main movie soundtrack is in English.



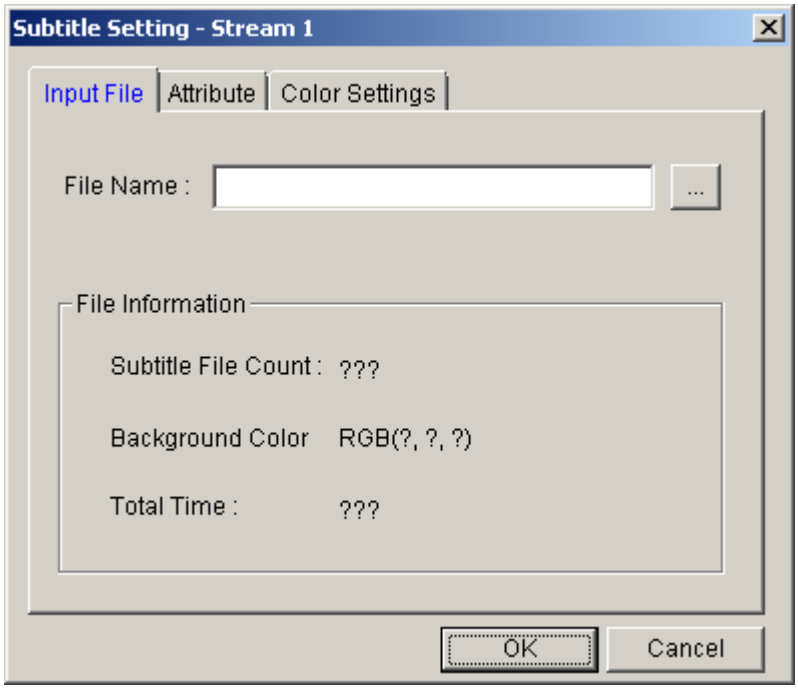
Once done then click **OK.**

The audio stream appears in the **Timeline Viewer** as well. To add the (in this case) second audio stream, first click the **Audio 2** button.

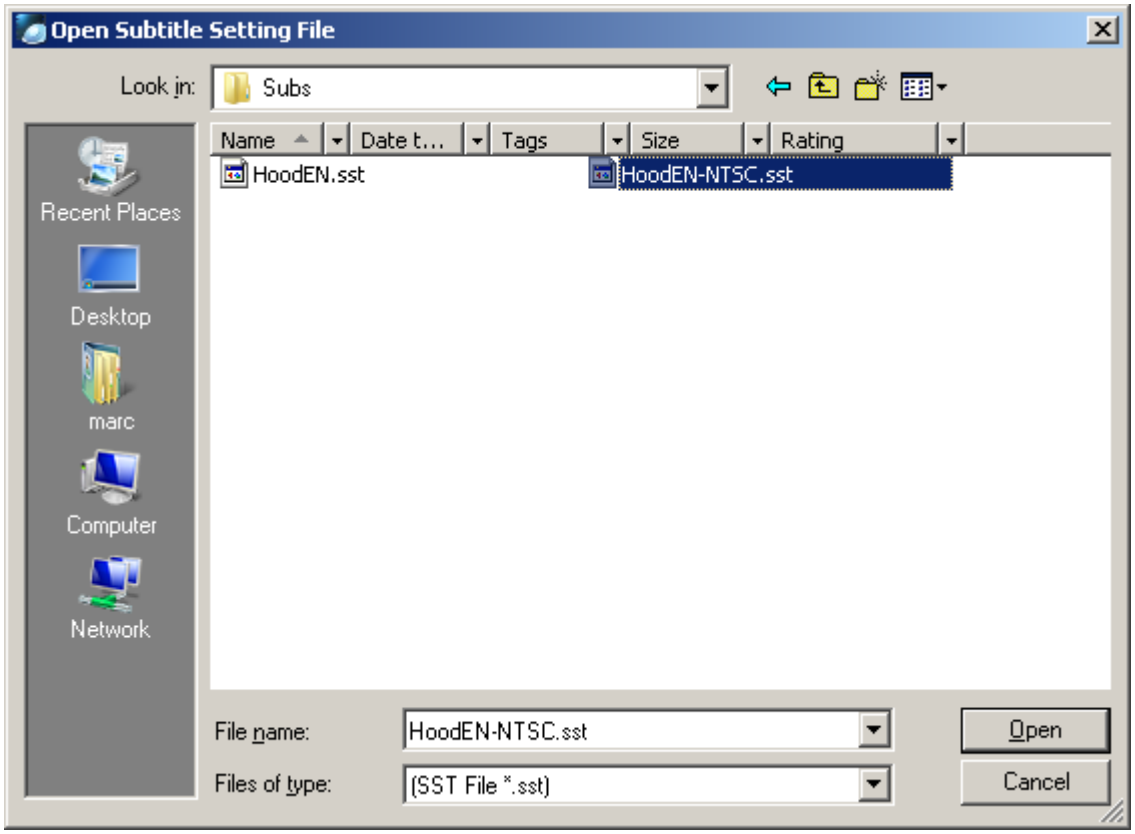
Then simply repeat the complete process as just described for adding the second audio stream, in my case the commentary track. Do not forget to set the attribute. **Note** that all audio streams should generally have the same End Point.

Now that we're done with adding the audio streams we can go ahead with adding the subtitles.

Click the **Subtitle Source** button on the **Settings Toolbar**. The following window opens.

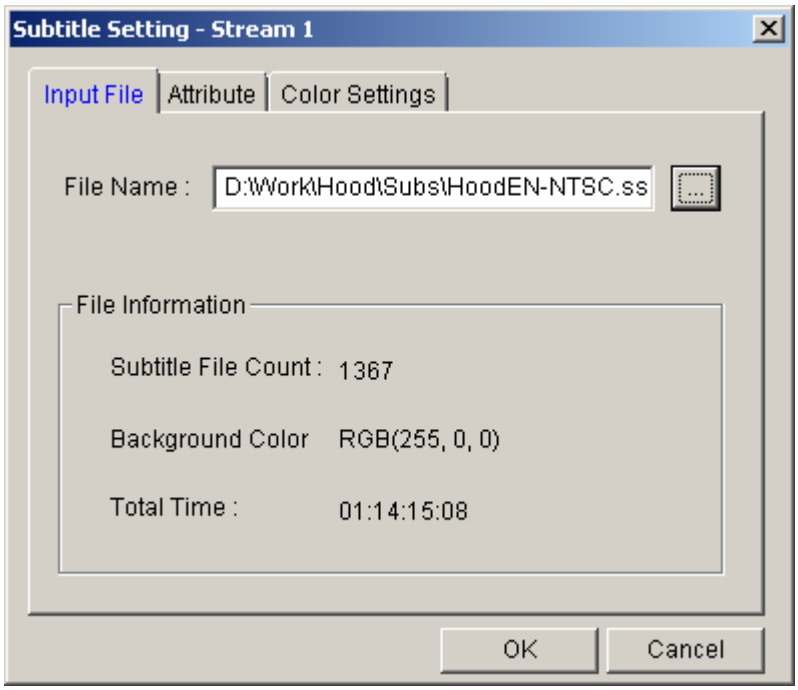


Click **…** and find and select the **SST** file that you prepared.



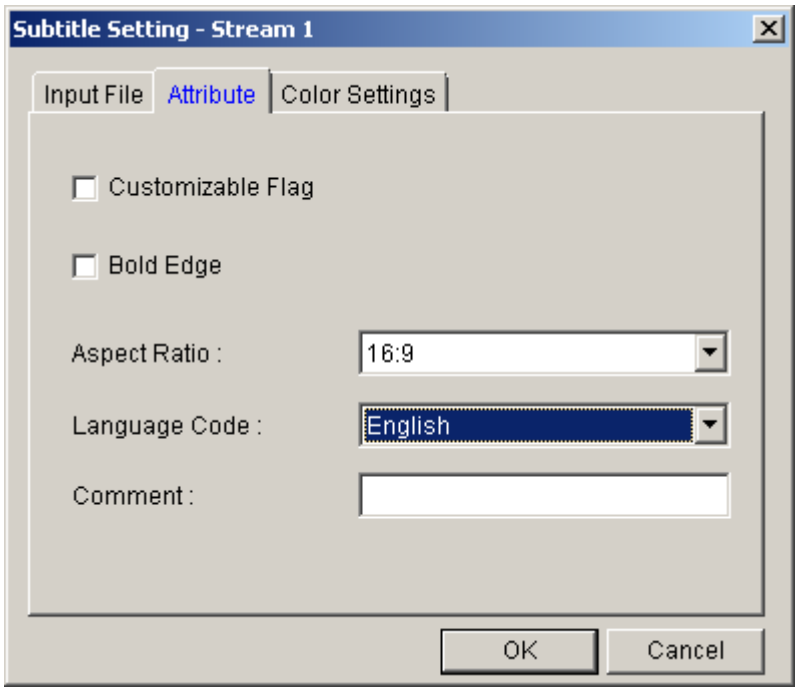
Then click **Open**.

You will return to the **Subtitle Setting** window.



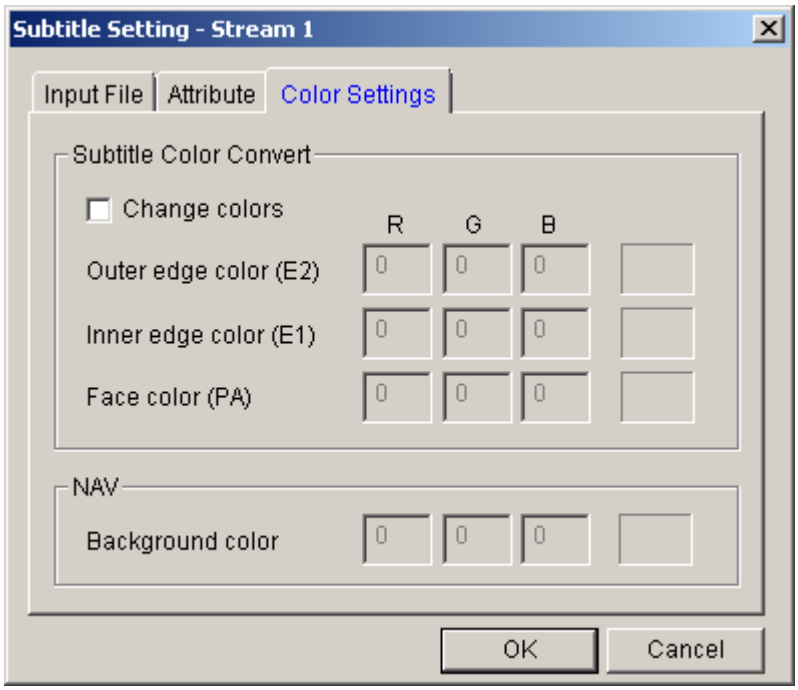
You now see some information here. There's 1367 subtitles, the background color is red (255,0,0), and the total time that there are subtitles on the screen during the movie is about 1 hour 14 minutes.

Click the **Attribute** tab.



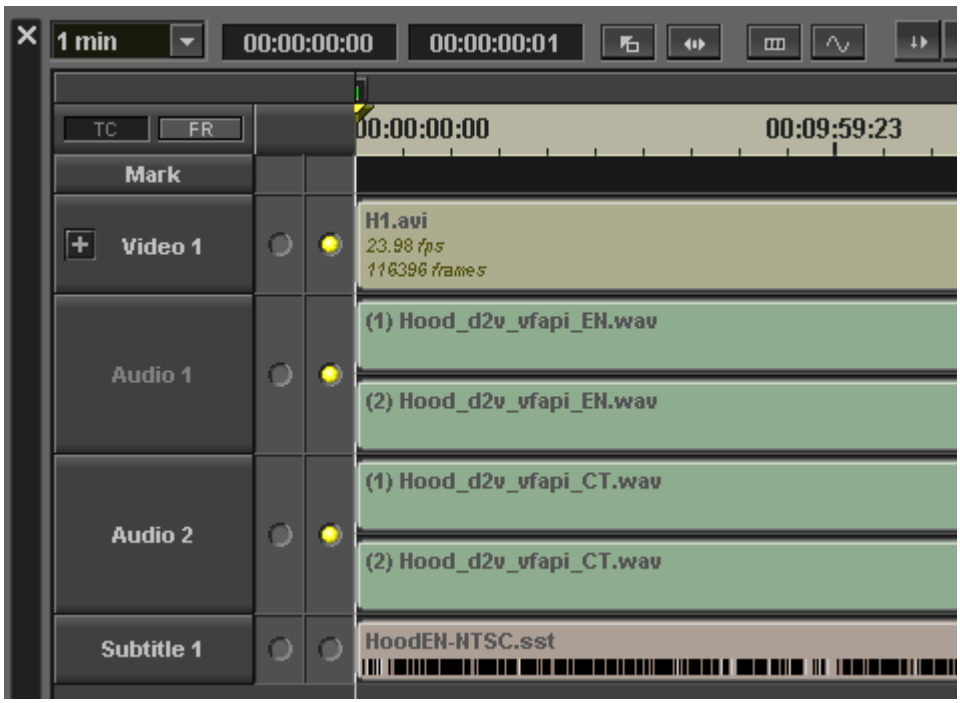
Here can you set the language code that will be displayed in the XMB menu on the PSP while playing the movie. Select the appropriate language from the list. No other settings need to be changed here.

Click the **Color Settings** tab.
You will find the following.



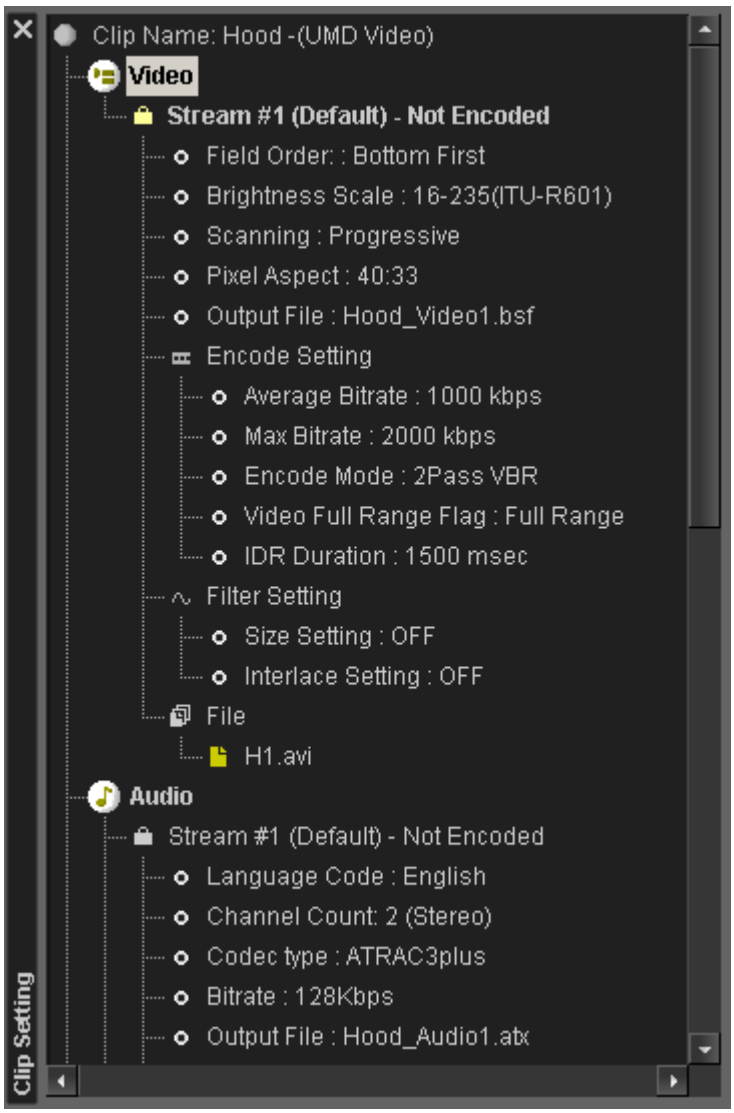
Here we can (and in most cases *must*) set the subtitle colors as they will appear on the screen. I will not go into detail here on how to do this. I have written another chapter to explain this section. Please read it first and then set the appropriate values here. Once done click **OK**.

The subtitle stream appears in the **Timeline Viewer** as well. Repeat above steps for any other subtitles that you want to add. Remember to select the correct stream to edit/load in the **Timeline Viewer** section first. All streams are now loaded and visible in the **Timeline Viewer**.



The streams that have a yellow button in front of them are selected to be included in the encoding process. Subtitle streams are not selected by default. To select it click on the **right** one of the two buttons you see in front of it. The button will turn yellow to show the stream is selected.

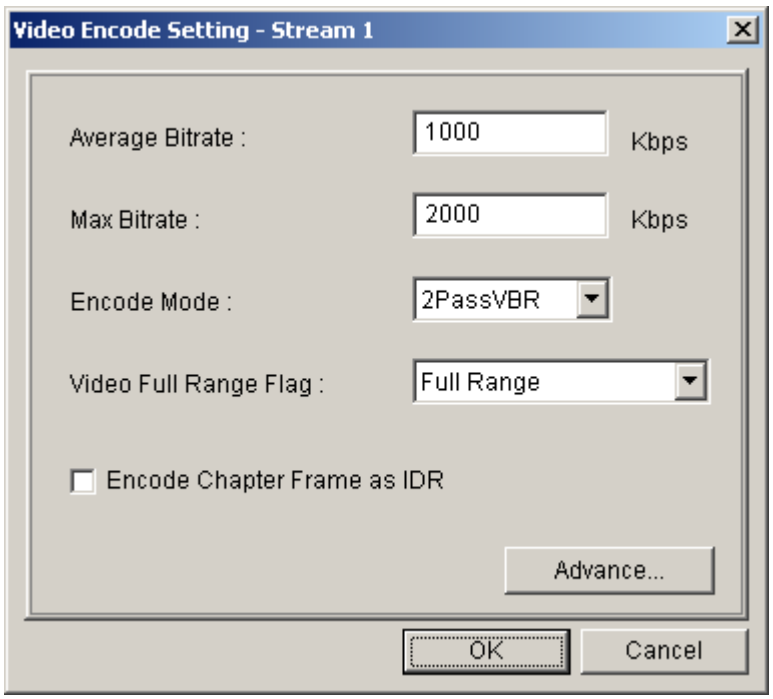
Now that all streams are loaded you will see that the information in the Clip Setting section has updated as well to reflect the files that have been loaded.



These values are informational only, there's nothing that you need to change here.

Now all streams have been loaded and selected we need to set a few more encoding settings, in particular those related to video quality. Click the **Video Enc Setting** button on the **Settings Toolbar**.

The following window opens.



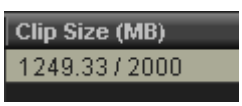
Here we are going to set the bit rate with which the movie will be encoded, as well as the number of passes. The values for **Average Bitrate** and **Max Bitrate** depend a bit on what kind of quality you want and what kind of file size you want the movie to be. It also depends on the video source that you are using. The general rule is that the higher you set the **Average Bitrate**, the higher the video quality will be but also the larger the clip size (and file size).

Here is an example. The bitrates as depicted above (1000 average, 2000 max) are the default settings. They will result in an estimated clip size of about 760 Mb (in the case of Hoodwinked). You can find this estimated value in the **Project Control** section.

This video quality will look ok on the small PSP screen, however if you connect your PSP to a TV it will look like shit. So in general the default values are no use. So how to set these values? For a DVD source it's useful to give these some higher values as the source video quality is lower. If you use a HD source you can use lower values as the video quality is quite good already.

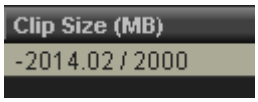
Personally I'll always start with an **Average** value of 1800 and a **Max** value of 2300. I then check the clip size. If it gets too large I will lower these values, if there's some room left I might increase them.

For this movie setting the values to **1800/2300** gives me the following clip size:



I could still increase the bitrates a bit; if I use 2000/2500 the clip size will be 1370 MB. Personally 2000/2500 is the maximum setting I use.

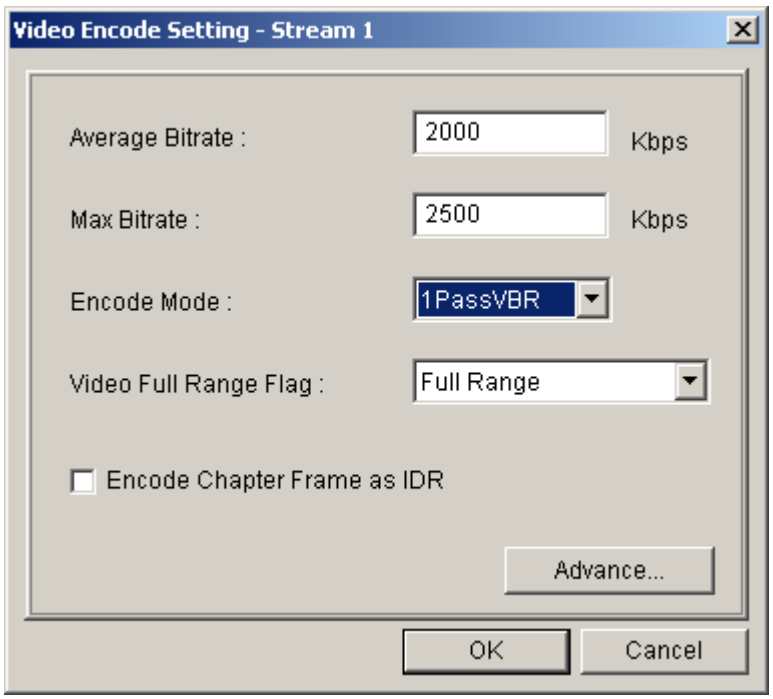
Now let's set the bitrates really high and see what happens. With a setting of 3500 (average) and 4000 (max), with this particular movie I get the following clip size:



You see that the value turns negative. This means that the final clip size will be larger than the 2000 MB limitation that we set when we opened the project. This also means the ISO will become too large and the PSP will not be able to play it. So you have to set the values lower again.

For this movie I will go with 2000/2500. The clip size will be about 1370 MB which leaves me some room in the ISO for other things (menu, trailers, extras etc.)

So here are the settings that I will start encoding the movie with:



Note that I set the **Encode Mode** to **1PassVBR**. Default it was **2PassVBR**. Encoding a movie takes a really long time. 2Pass takes twice as long as 1Pass and the most noticeable difference will be the clip size. So do not waste time and just do your encodes with **1PassVBR**. When done click **OK**.

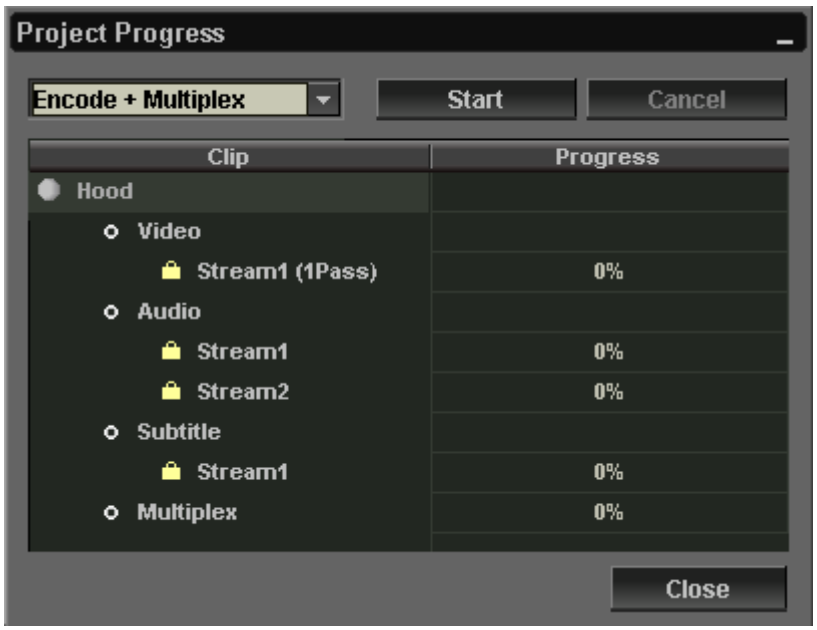
At this point, now all streams have been loaded and selected and the video encode settings have been selected, it is useful to save our project. So click the **Save** button in the **Main toolbar**.

The project will be saved as a **[project name].epj** file in your work folder. In my case **Hood.epj**.

In principle we are now ready to start encoding but before doing so I would recommend verifying your subtitles. Doing this before starting the encode can prevent quite some frustration. You can start the verify by clicking the **left** one of the two radio buttons in front of the subtitle stream. The verify will start without any messages or popup windows. When it completes the radio button will turn green.

If during the verify no messages were logged in the **Log Window** then the subtitles are good to go. If an error was found a message will be logged in the Log Window, pointing to the subtitle image that has an issue. When there is an error verify will not complete so after fixing the error you should start a new verify, until it completes without an error message in the Log Window. More info about common errors and how to resolve them you can find in another chapter.

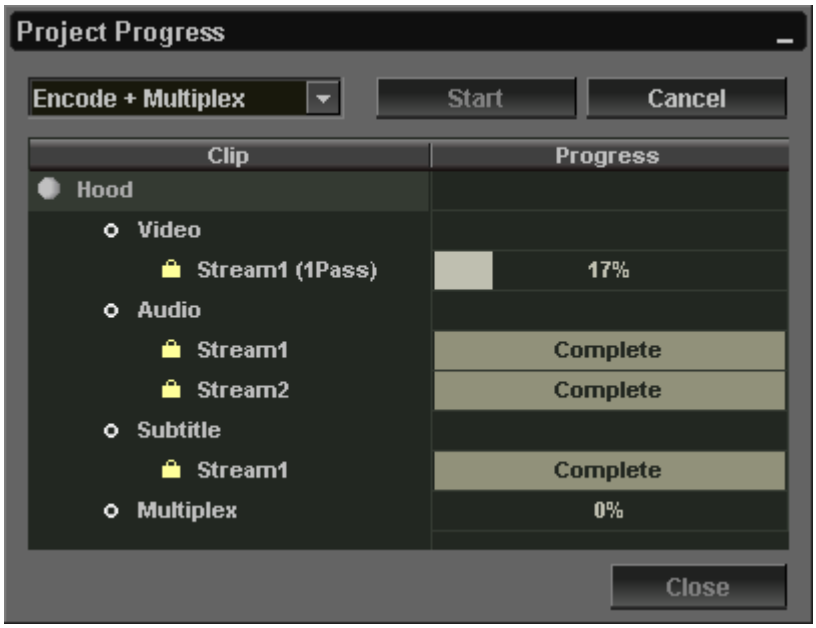
Ok, time to start the actual encoding process. Click the **Start…** button in the **Project Control** section. You will get a **Project Progress** window with an overview of the streams that you selected (yellow radio button). If you don't see all the streams you need or if you see streams that you don't need then click **Close** and select the correct streams in the **Timeline Viewer** section, then start again.



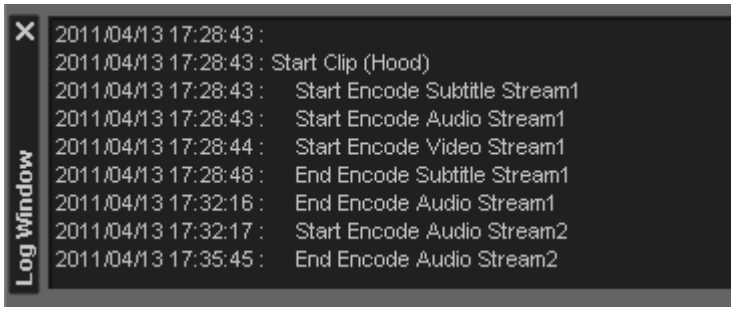
From the pull down list select **Encode + Multiplex**. There are two other options there. I will discuss them in the chapter of advanced encoding. For now click **Start** to start encoding.

The encoding process starts. First the encoding of the audio and subtitle streams will start simultaneously. Once all audio and subtitle streams have finished the video stream will be encoded.

Progress can be followed in the **Project Progress** window.



Informational (and eventual error) messages will be shown in the Log Window.

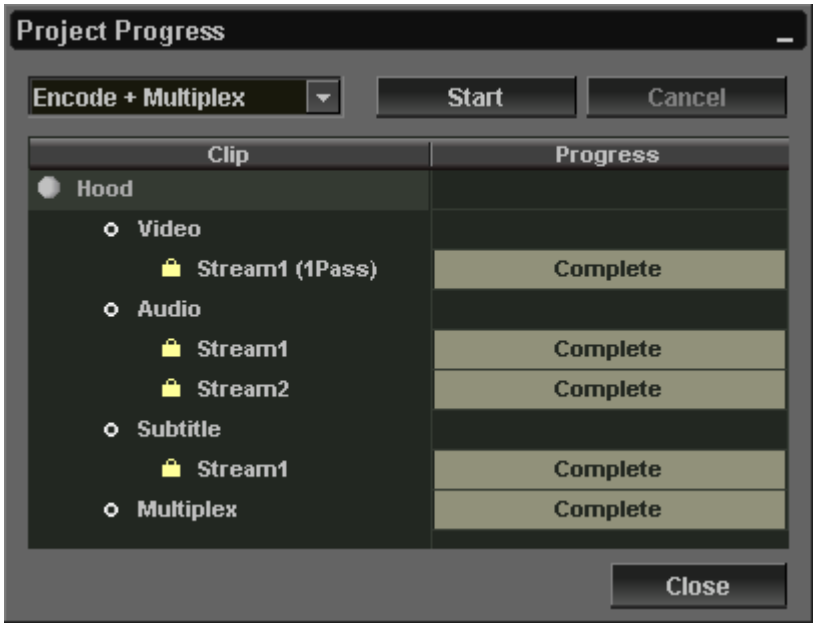


The encoding process will take a long time so go do something else in the mean time. Depending on your hardware, the length of the movie (number of frames), and the chosen quality a total encoding session can take anywhere between 6 and 24 hours for a 1Pass encode. The subtitle and audio streams will encode relatively quickly. The biggest chunk of that time will be the video encoding which might have a progress of anywhere between 0.5% and 5% per hour.

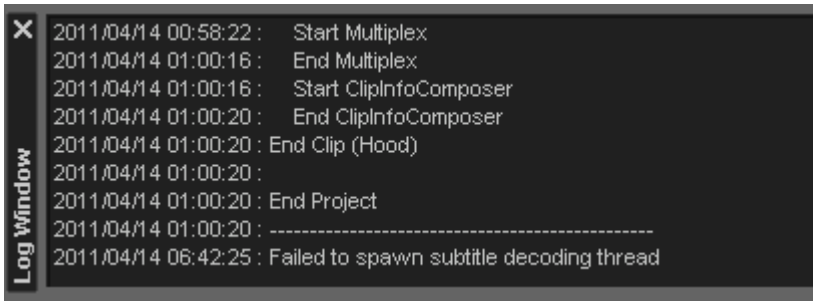
A 1Pass encode will complete before the video reaches 34%, it will skip to 100% to show it is done. A 2Pass encode will have its first pass run up to 34%, then skip to about 68% and start its second pass, it will run till 100% to show it is done.

After several hours when all the streams have been encoded the **Multiplexing** process will be started, which will take several minutes. Once this has completed the **ClipInfoComposer** will be started. This will take mere seconds. This will complete the encoding process and the result is visible in different places, like in the **Project Control** section.

More obvious of course is the **Project Progress** window:

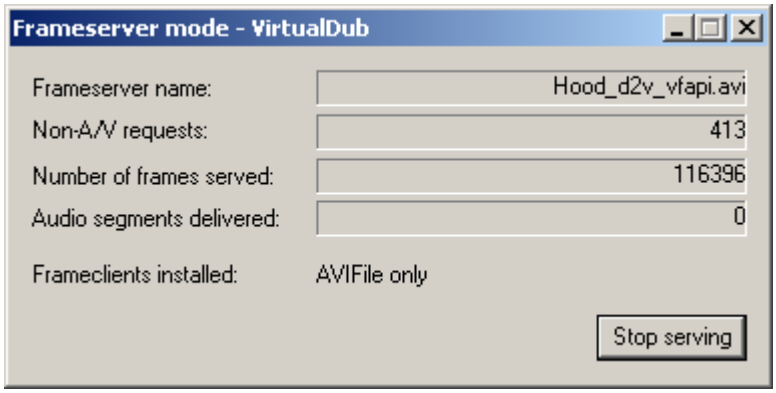


Finally the **Log Window** will also show completion:

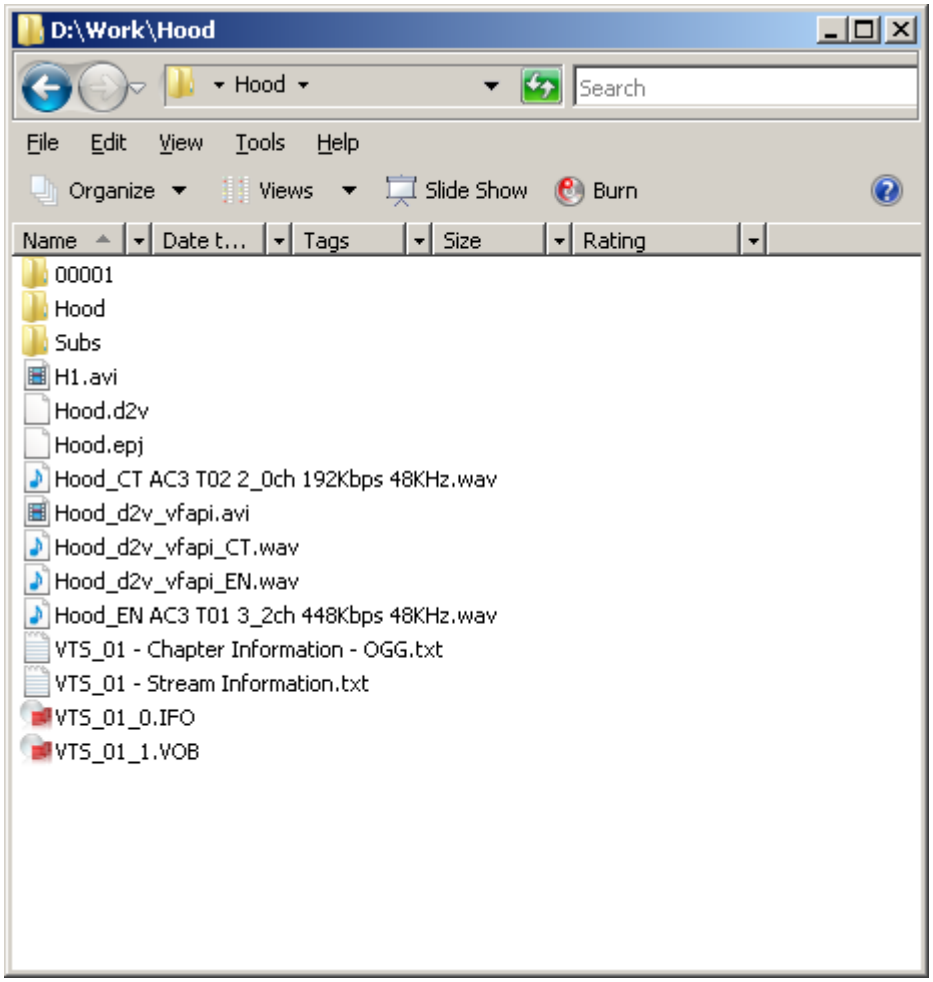


The **Log Window** may show multiple **warnings**. These can be safely ignored.

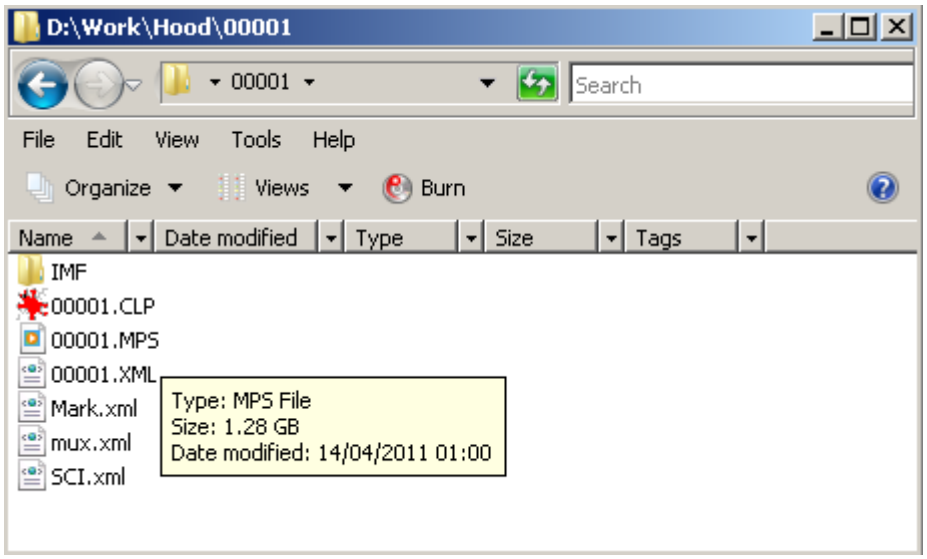
At this point you can click **Close** to close the **Project Progress** window and after that you can close UMD Stream Composer completely. You now can also stop the VirtualDub **Frame Server** by clicking **Stop serving**. After this you can close VirtualDub.



You can find the result of the encoding process in your work folder. Two new folders called **00001** and **Hood** have appeared:



In **00001** you will find two files that we need to make the UMD: **00001.MPS** and **00001.CLP**



See the next chapters to find out what to do with these files.